

WE CLAIM:

1. A method of treating a lung proliferative vascular disorder in a patient comprising administering an HMG-CoA reductase inhibitor, wherein the HMG-CoA reductase inhibitor is present in an amount effective to reduce vascular occlusion in the pulmonary arteries of the patient, and which does not substantially increase endothelial cell nitric oxide synthase activity in the endothelial cells of the pulmonary arteries of the patient.
2. The method of claim 1, wherein the lung proliferative vascular disorder is selected from the group consisting of primary pulmonary hypertension, secondary pulmonary hypertension, Eisenmenger's syndrome, chronic thromboembolic disease, pulmonary fibrosis, obliterative bronchiolitis, and lymphangioleiomyomatosis.
3. The method of claim 2, wherein the lung proliferative vascular disorder is primary pulmonary hypertension.
4. The method of claim 1, wherein the HMG-CoA reductase inhibitor is selected from the group consisting of atorvastatin, cerivastatin, fluvastatin, lovastatin, mevastatin, pravastatin, pitastatin, rosuvastatin and simvastatin.
5. The method of claim 1, wherein the HMG-CoA reductase inhibitor is simvastatin.
6. The method of claim 1, wherein the HMG-CoA reductase inhibitor is administered in a pharmaceutical formulation at a dose of from about 0.1 to about 100 mg/kg per day.
7. The method of claim 6, wherein the formulation further comprises a pharmaceutically acceptable carrier suitable for oral, parenteral, transdermal, transmucosal, or pulmonary delivery.
8. The method of claim 1, further comprising administering an additional active agent.
9. The method of claim 8, wherein the additional active agent is selected from the group consisting of anticoagulants, vasodilators, macrolide anti-inflammatory agents, diterpenoid

triepoxides, endothelin receptor antagonists, geranyl transferase inhibitors, farnesyl transferase inhibitors, and inhibitors of EGF tyrosine kinase, and pharmaceutically acceptable salts and esters thereof.

- 5 10. The method of claim 9, wherein the additional active agent is a vasodilator selected from the group consisting of prostanoids, phosphodiesterase (PDE) inhibitors, nitric oxide, nitric oxide precursors and calcium channel blockers.
11. The method of claim 10, wherein the calcium channel blocker is nifedipine or diltiazem.
- 10 12. The method of 10, wherein the prostanoid is prostacylin, treprostinil, iloprost, beraprost, prostaglandin E<sub>1</sub> or prostaglandin E<sub>2</sub>.
13. The method of claim 12, wherein the prostanoid is prostacyclin.
- 15 14. The method of claim 9, wherein the vasodilator is a PDE inhibitor.
15. The method of claim 14, wherein the PDE inhibitor is a PDE (V) inhibitor.
- 20 16. The method of claim 9, wherein the macrolide anti-inflammatory agent is rapamycin and its derivatives, FK506, erythromycin or azithromycin.
17. The method of claim 9, wherein the diterpenoid triepoxide is triptolide.
- 25 18. The method of claim 9, wherein the endothelin receptor antagonist is ambrisentan, BMS207940, bosentan, sitaxsentan or tezosentan.
19. The method of claim 1, wherein neointimal smooth muscle cell hyperplasia is decreased upon treatment with the antiproliferative agent, thereby reducing the neointimal smooth muscle
- 30 cell hyperplasia in the pulmonary arteries of the patient.

20. The method of claim 1, wherein the lung proliferative vascular disorder is characterized by vascular occlusion in the pulmonary arteries of the patient, and wherein the vascular occlusion is reversed upon treatment with the antiproliferative agent, such that an increase in blood flow is provided through the pulmonary arteries.
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21. The method of claim 20, wherein the blood flow is increased by from about 5% to at least about 300%.
22. The method of claim 1, wherein the lung proliferative vascular disorder is characterized by pulmonary hypertension, and wherein the hypertension is reversed upon treatment with the antiproliferative agent.
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23. The method of claim 7, wherein the antiproliferative agent is administered by inhalation.
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24. The method of claim 23, wherein the antiproliferative agent is administered using a dry powder inhaler, metered dose inhaler, or nebulizer.
25. A method of preventing vascular occlusion in a patient predisposed to developing pulmonary hypertension, comprising administering an antiproliferative agent to the patient.
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26. The method of claim 25, wherein the patient is predisposed to develop pulmonary hypertension due to a genetic defect in the TGF- $\beta$  superfamily of receptors of the patient.
27. The method of claim 26, wherein the genetic defect is a haploinsufficiency of bone morphogenetic protein receptor II (BMPRII).
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28. The method of claim 27, wherein the antiproliferative agent is an HMG-CoA reductase inhibitor.
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29. The method of claim 28, further comprising administering an additional active agent selected from the group consisting of anticoagulants, vasodilators, diterpenoid triepoxides, and

endothelin receptor antagonists, macrolide anti-inflammatory agents, geranyl transferase inhibitors, farnesyl transferase inhibitors, and inhibitors of EGF tyrosine kinase receptor signaling and pharmaceutically acceptable salts and esters thereof.

5     30. A method of reversing right ventricular hypertrophy in a patient suffering from pulmonary hypertension comprising administering an antiproliferative agent.

31. The method of claim 30, wherein the antiproliferative agent is an HMG-CoA reductase inhibitor.

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32. The method of claim 31, further comprising administering an additional active agent selected from the group consisting of anticoagulants, vasodilators, macrolide anti-inflammatory agents, diterpenoid triepoxides, inhibitors of EGF tyrosine kinase receptor signaling, geranyl transferase inhibitors, farnesyl transferase inhibitors, and endothelin receptor antagonists, and  
15 pharmaceutically acceptable salts and esters thereof.

33. A method of treating pulmonary hypertension comprising administering an antiproliferative agent.

20     34. The method of claim 33, wherein the antiproliferative agent is an HMG-CoA reductase inhibitor.

35. The method of claim 34, wherein the HMG-CoA reductase inhibitor is simvastatin.

25     36. The method of claim 35, wherein the method of administration is selected from the group consisting of pulmonary, oral, transmucosal, transdermal and parenteral administration.

37. The method of claim 36, wherein the HMG-CoA reductase inhibitor is administered by inhalation.

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38. The method of claim 34, wherein the HMG-CoA reductase inhibitor is administered in a

dose of from about 0.1 to about 100 mg/kg per day.

39. The method of claim 34, wherein the formulation further comprises an additional active agent selected from the group consisting of anticoagulants, vasodilators, macrolide anti-  
5 inflammatory agents, FK506, inhibitors of EGF tyrosine kinase receptor signaling, diterpenoid triepoxides, geranyl transferase inhibitors, farnesyl transferase inhibitors, and endothelin receptor antagonists, and pharmaceutically acceptable salts and esters thereof.